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ENTOMOLOGY.[1]

Tertiary Tipulidæ.—Another important contribution to our knowledge of fossil insects has just been made by Mr. S. H. Scudder, whose Tertiary Tipulidæ[2] is in many respects one of the most satisfactory memoirs upon a fossil family that we have. It is remarkable that a large proportion of the several hundred specimens of these delicate insects collected in the famous Florissant deposits have not only "the venation of the wings completely represented, with all their most delicate markings, but also the slender and fragile legs with their clothing of hair and spurs, and to some degree at least the antennæ and palpi. Even the facets of the compound eyes are often preserved as in life." The nine lithograph plates accompanying this paper show very well the correctness of these statements.

Mr. Scudder describes twenty-nine new species belonging to ten genera of Limnobinæ and twenty-two new species belonging to five genera of Tipulinæ. The general results of his study are summarized as follows:

1. The general facies of the Tipulid fauna of our western tertiaries is American, and agrees best with the fauna of about the same latitude in America, as far as we are at present acquainted with it.

2. All the species are extinct, and though the Gosuite Lake and the ancient lacustrine basin of Florissant were but little removed from each other, and the deposits of both are presumably of oligocene-age, not a single instance is known of the occurrence of the same species in the two basins. The Tipulid fauna of the Gosuite Lake, however, is as yet very little known, and it should be added that the few described species are in no instance the same at Green River, Wyo., and White River, Colo., both localities in the same ancient lake basin.

3. No species are identical with any of the few described European tertiary Tipulidæ.

4. Restricting ourselves to the Florissant basin, from the paucity of material in the Gosuite fauna, it will be noticed that a remarkable proportion of genera (eight out of fifteen) are not yet recognized among the living, these genera including about one-third of the species.

[1] Edited by Clarence M. Weed, New Hampshire College, Durham, N. H.

[2] Tertiary Tipulidæ, With Special Reference to those of Florissant, Colorado, By Samuel H. Scudder. Proc. Amer. Phil. Society, vol. XXXII. Reprinted April 4, 1894.

5. With one (American) exception—Cladura—all the exisiting genera which are represented in the American tertiaries are genera common to the north temperate zone of Europe and America, and are generally either confined to these regions or the vast proportion of their species are so confined. A similar climate is indicated, but this latter conclusion should be received with hesitation, since our knowledge of the distribution of American genera is mostly confined to the Atlantic States. There are, however, no certain indications of a warmer climate, such as have been shown from the study of other groups.

6. There are no extinct groups higher than genera, but one or two of these, such as Cyttaromyia and Micrapsis, are of a somewhat striking character.

7. The relative importance of the two subfamilies of Tipulidæ though differing on the two continents of Europe and America both in tertiary and in recent times, was much the same, on each continent, in tertiary times as now; while in the relative preponderance of the different tribes of Limnobinæ, our tertiary fauna shows a somewhat closer agreement with the European tertiary than with the existing American fauna. There are, however, no striking generic alliances pointing in the same direction.

Dr. Packard on Lagoa crispata.—In an important paper presented to the American Philosophical Society[3] Dr. A. S. Packard gives an interesting account of a remarkable moth, accompanied by seven plates of figures. The larva in question is remarkable because it possesses the rudiments of two pairs of abdominal legs in addition to the five pairs usually present in lepidopterous larvæ. In summing up the characters which lead him to consider Lagoa a generalized type the author says: In the superficial characters of the imago and in having in the larva abdominal legs, Lagoa resembles the Liparidæ, but in all its essential characters, those of the egg, larva, pupa and imago, it belongs with the Cochliopodidæ, except in the matter of the presence of abdominal legs in the larva. On this account it seens fairly entitled to be regarded as the type of an independent group. We may either regard it as a generalized ancient group of Cochliopodidæ, and refer it to a subfamily Lagoinæ, or we may boldly remove it altogether from either of the two families mentioned and consider the genus as the representative of a distinct family and designate the group by the name of Lagoidæ. This on the whole seems to us to be the most judicious course to pursue. At all events the insect is plainly enongh an ancient ancestral or generalized form. It is, so to speak, a primitive Cochliopodid with larval abdominal legs. It lays eggs like those of Limacodes, etc.; its head in the larval state is concealed from above by the prothoracic hood; its larval armature is more of the Cochliopodid type than Liparid; so are the pupal characters and the nature of the cocoon; and the shape of the important parts of the head and the essential features of the venation are overwhelmingly Cochliopodid. Under these circumstances we feel justified in regarding Lagoa as a most interesting ancestral form, and as affording arguments for considering the Bombyces, as a whole, as a generalized and ancestral group, and epitomizing the other higher Lepidopterous families somewhat as Marsupials do the placental orders of mammals."

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[3] A Study of the Transformations and Anatomy of *Lagoa crispata*, a Bombycine Moth. Proc. Am. Phil. Soc., vol. XXXII, pp. 275–292.

In a note Dr. Packard announces his recent discovery that Lagoa is preoccupied by Megalopyge of Hübner, and Lagoidæ by Megalopygidæ of Berg.

Miss Ormerod's Report.—Miss Eleanor A. Ormerod's seventeenth report on the injurious insects of England which has lately appeared forms a volume of 152 pages treating of a great variety of insect pests. There are a number of illustrations, several being new. The most remarkable insect appearance of last season was the so-called plague of wasps, already mentioned in the NATURALIST. Concerning this Miss Ormerod writes: "The enormous excess of wasp presence over the average was in many places nothing short of a calamity, inflicting pain, and to some degree danger to ourselves, and to horses exposed to sudden attack, and great loss to fruit-growers. Within our houses in many cases the wasps swarmed to such a degree and especially at meal times as to make their presence on the food a real trouble; the agricultural or garden laborers were severely stung where working on crops to which the wasps had been attracted by the presence of aphides, or on fruit stocks where budding was going forward. Also pain, risk and delay in farm work were caused by fierce onslaughts of wasps from nests turned up in plowing. Great losses were caused by the quantity of fruit entirely ruined up to almost wholesale destruction in the grounds of large fruit growers, and to this must added the losses to shop owners dealing in such commodities as find favor in the eyes of wasps for their own consumption, or thievish abstraction for food of the coming on generation still in maggot condition, to be counted by hundreds, in each of the vast number of nests which were the headquarters of the marauding and troublesome pests."

Miss Ormerod attributes the extraordinary abundance of the wasps to the early and long continued drouth which enabled the insects to get an unusual start.

New York Reports.—The Eighth and Ninth Reports of Dr. J. A. Lintner, State Entomologist of New York, have recently been published. They are good sized volumes giving abundant evidence of the pains-taking preparation so characteristic of their predecessors in the same series. The contents of the eighth report include an introductory summary of the important entomological events of 1891; a discussion of a number of injurious insects; notes on various insects and remedies for them; two entomological addresses, and a bibliography of the publications of the entomologist for 1891, 1875 and 1876. The ninth report is equally full of varied and valuable information, and contains besides a reprint of Dr. Asa Fitch's Catalogue of Homoptera which will be apappreciated by many students.

Notes.—Mr. Alex. A. MacGillivray of Ithaca, New York, continues his papers on North American Thysanura in *The Canadian Entomologist.* He advises the restriction of the name Poduridæ to genera having the saltatory organ, and includes the genera in which it is absent under the Aphoruridæ. A number of new genera and species are described.

An interesting colored plate showing the variations of the larvæ of *Arctia caia* appears in *The Entomologists' Record,* Feb. 15, 1894.

Prof. T. D. A Cockerell publishes in Bulletin 10 of the New Mexico Experiment Station a List of Insects found on Cultivated plants in the Mesilla Valley.

Two new Deltoid moths—*Pseudaglossa forbesii* and *Pallachira hartii*—are described by Prof. G. H. French in a recent Bulletin of the Illinois State Laboratory of Natural History.

In a circular recently issued from the Department of Agriculture Mr. L. O. Howard announces the spread of *Aspidiotus perniciosus* through many eastern states, and gives directions for its destruction.

In Bulletins 35 and 36 of the West Virginia, Experiment Station Mr. A. D. Hopkins continues the publication of his studies of wood boring insects. A large number of fairly good original figures are published.

In Bulletin 51 of the Ohio Experiment Station, Mr. F. M. Webster publishes a number of miscellaneous articles. The one of most general interest is on "Some Insect Immigrants of Ohio."

Professor Herbert Osborn announces the discovery[4] that *Aphis rumicis* is the summer form of *A. euonymi,* and gives observations confirming the statement. He also reports upon the relations of the Schizoneura ovipositing on dogwood (Cornus) and the one living on grass roots.

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[4] Bull. 23, Iowa Experiment Station.